

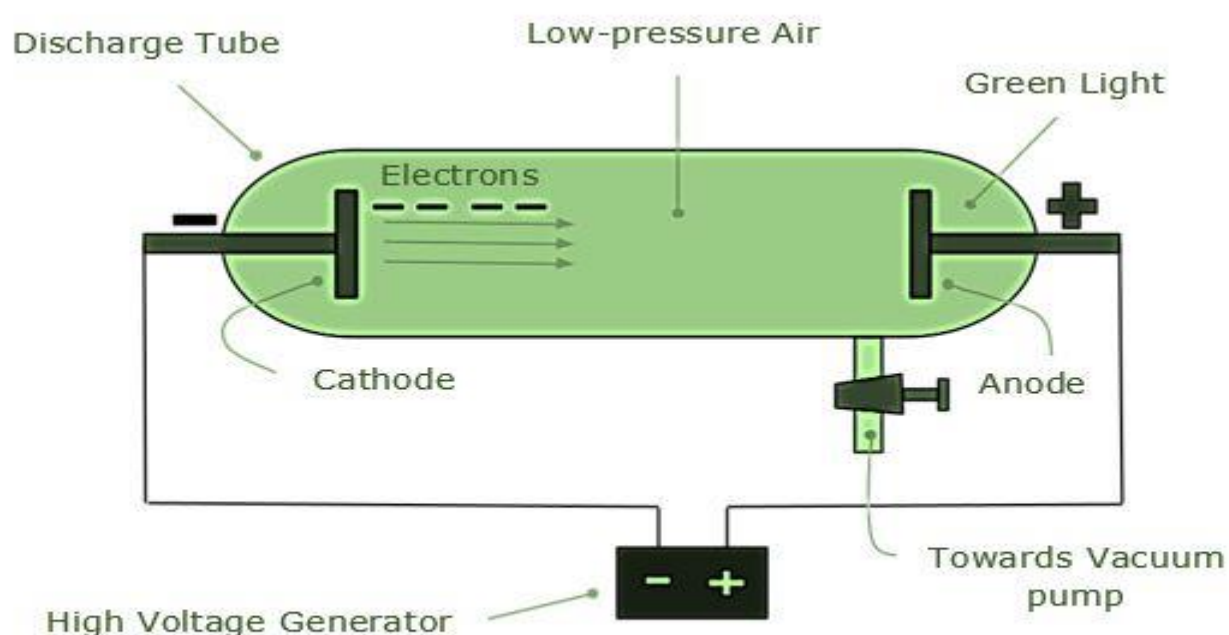
# DISCOVERY OF ELECTRONS.

Electrons were the first sub-atomic particles to be discovered by J.J. Thomson and the Cathode Ray Experiment in the year 1897. In the late 19th century, British physicist and chemist, J.J. Thomson conducted ground-breaking experiments with cathode ray tubes. These tubes were glass vessels with most of the air evacuated, containing electrodes at either end. When a high voltage was applied, a beam, termed "cathode rays," was observed coming out from the negatively charged cathode towards the positively charged anode.

## INSTRUMENTATION.

1. Glass tube: Used to store the lowered pressure gas.
2. Vacuum pump: Used to reduce the pressure of the gas in the glass tube.
3. Battery: It ionizes gas which is in low pressure at high voltage.
4. Ammeter: Used to detect the amount of current.
5. Cathode and Anode: Used in acceleration of electrons.

# DIAGRAM OF DISCHARGE TUBE.



## Discovery of Electrons

### EXPERIMENTATION:

The experiment was done on a cathode ray tube, on which high voltage is applied to the two electrodes which are at one end of the cathode ray tube, which emits particles to circulate from the negatively charged electrode known as a cathode to a positively charged electrode called an anode.

## OBSERVATION AND INTERPRETATION:

J.J. Thomson's experiments with cathode ray tubes showed that all atoms contain tiny negatively charged subatomic particles or electrons. Thomson proposed the plum pudding model of the atom, which had negatively-charged electrons embedded within a positively-charged "soup."

## CHARACTERISTICS OF ELECTRONS:

1. They cause a green fluorescence on the glass wall of the discharge tube.
2. They travel in the straight line and therefore causing sharp shadows on the walls opposite to the cathode when the solid object is placed on it.
3. They cause the heating effect when allowed to strike a thin metal foil as the foil becomes hot.
4. They have momentum because when a small paddle wheel is placed in their path the wheel rotates.

## CONCLUSION:

In summary, **the discovery of electrons not only revolutionized atomic theory but also established a foundation for modern physics**, influencing countless scientific advancements in chemistry, materials science, and technology.